



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| | | | | |
|--|-------------|----------------------|---------------------------------|-----------------------------|
| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/522,036 | 01/19/2005 | Kenji Maruyama | SHIGA7.004APC | 1510 |
| 20995 7590 09/20/2007 KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614 | | | EXAMINER LEE, SIN J | |
| | | | ART UNIT 1752 | PAPER NUMBER |
| | | | NOTIFICATION DATE 09/20/2007 | DELIVERY MODE ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartec@kmob.com
eOAPilot@kmob.com

| | | | |
|------------------------------|-------------------------------|---------------------------------|--|
| Office Action Summary | Application No. 10/522,036 | Applicant(s) MARUYAMA ET AL. | |
| | Examiner Sin J. Lee | Art Unit 1752 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-10,13-18,21,22,30,31,39,40 and 43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-18,21,22,30,31,39 and 40 is/are allowed.
- 6) ☒ Claim(s) 1,4-10,13,14 and 43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In view of the amendment, previous 112 rejection on claim 10 and previous 103(a) rejection on claims 1, 4-10, 13, 14, 30, 31, 39 and 40 over Bant'006 are hereby withdrawn. In view of applicants' clarification, previous 112 rejection on claims 15-18, 21 and 22 is hereby withdrawn.

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 43 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

Art Unit: 1752

regards as the invention. In claim 43, applicants recite that a method for synthesis of present component (A) comprises reacting a novolak resin with the crosslinking agent (VI) in the "substantial" absence of an acid catalyst. The phrase "substantial" renders the claim indefinite because it is unclear what quantity of acid catalyst applicants mean by "substantial" absence of the acid catalyst.

5. Claims 1, 4-10, 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants recite in claim 1 that the compound (B) is represented by the following general formulas (ii) and (iii): . . . , a bis(trichloromethyl)triazine compound of formula (iv). Are applicants saying that the present compound (B) can be any of those three compounds of formulas (ii), (iii) and (iv) ?

Appropriate correction or clarification is required.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1, 4-10, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bantu et al (6,072,006) in view of Yamato et al (6,004,724).

In Example 2, Bantu teaches synthesis of poly[p-(cyclohexyloxyethoxy)styrene/p-hydroxystyrene] which is prepared by reacting poly(p-hydroxystyrene) and cyclohexyl vinyl ether. In Example 4, Bantu teaches a resist composition containing the polymer of Example 2, a triphenylsulfonium salt (a photoacid generator) and a base additive.

Art Unit: 1752

Bantu does not teach present photoacid generators (B) of claim 1. Yamato teaches present compounds of formulas (ii) and (iii) (see abstract). Yamato teaches that a photoresist composition containing such photoacid generators exhibit excellent lithographic properties, especially a high sensitivity (see col.23, lines 22-43). Thus, it would have been obvious to one skilled in the art to use Yamato's photoacid generators in Bantu's photoresist composition in order to obtain high sensitivity.

Bantu spin-coats his resist composition onto a wafer. The coated photoresist is exposed to 248 nm wavelength light, subjected to a post exposure bake and then developed. Bantu teaches (col.11, lines 59-67, col.12, lines 1-8) that the base additive is being used to *scavenge protons* present in the photoresist prior to being irradiated by the actinic radiation and that the base prevents attack and cleavage of the acid labile groups by the *undesirable acids*, thereby increasing the performance and *stability* of the resist. Since Bantu is using the base to reduce the amount of undesirable acids in the composition, it is the Examiner's position that Bantu's composition would inherently have the present range for the content of the acid component. Or, at least, the present range for the content of an acid component would have been obvious to one skilled in the art at the time the invention was made because it has been held that discovering an optimum value of a results effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Bantu also teaches the equivalence of polyhydroxystyrene and novolaks as the reactant polymers (see col.4, lines 1-12). Therefore, it would have been obvious to one skilled in the art to use novolak polymer in Bantu's Example 2 as the reactant polymer with a reasonable

Art Unit: 1752

expectation of obtaining a photoresist having high contrast, increased sensitivity and improved high temperature flow characteristics. Bantu also teaches that his polymer can additionally contain alkali insoluble monomer unit such as styrene (see col.7, lines 64-67, col.8, lines 1-6). Bantu also teaches the coating thickness to be in the range of 0.1-10 um (see col.12, lines 30-35). This range overlaps with present range of 2-7 um and thus the prior art's teaching renders obvious present range. In the case "where the [claimed] ranges overlap or lie inside ranges disclosed by the prior art," a prima facie case of obviousness would exist which may be overcome by a showing of unexpected results, In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Therefore, Bantu in view of Yamato render obvious present inventions of claims 1, 4-10, 13 and 14.

Allowable Subject Matter

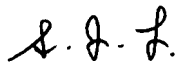
8. Claims 15-18, 21, 22, 30, 31, 39 and 40 are allowed. Bantu in view of Yamato does not teach or suggest the use of present poly(bissulfonyl)diazomethane photoacid generator in claims 15, 30 and 39.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

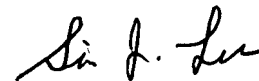
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Art Unit: 1752

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee
April 16, 2007



SIN LEE
PRIMARY EXAMINER